



# GROUND SYSTEMS

## Development and Operations

EXPLORATION BEGINS HERE



## PROGRAM HIGHLIGHTS • MARCH 2013

At NASA's Kennedy Space Center in Florida, the Ground Systems Development and Operations (GSDO) Program office is leading the center's transformation from a historically government-only launch complex to a spaceport bustling with activity involving government and commercial vehicles alike. GSDO is tasked with developing and using the complex equipment required to safely handle a variety of rockets and spacecraft during assembly, transport and launch. For more information about GSDO accomplishments happening around the center, visit: <http://go.nasa.gov/groundsystems>.



### NASA on Course to Launch Exploration Flight Test-1

The first spacecraft NASA has developed to fly astronauts beyond Earth's orbit since the Apollo era is on track toward a flight test next year, agency officials said Feb. 27 during a briefing to media. The test is planned for September 2014. An uncrewed Orion capsule will orbit Earth and return through the atmosphere at speeds unseen since astronauts last returned from the moon in 1972.

Exploration Flight Test 1 (EFT-1) will be the first chance engineers get to test Orion's design in space. Flying atop a United Launch Alliance Delta IV rocket, the spacecraft will be pressurized as it would if astronauts were onboard and yield data on the vehicle's performance, but also provide information for hardware that will be used when Orion is launched atop the Space Launch System rocket currently in development. During the flight test, Orion will orbit the Earth twice on a track that will take it more than 3,600 miles above us, about 15 times higher than the International Space Station.

For the complete story, visit: <http://www.nasa.gov/exploration/systems/mpcv/Tripprogrambriefing.html>

### Crew Rehearses Launch Abort System Stacking

Inside the Vehicle Assembly Building (VAB) at Kennedy Space Center, crane operators, technicians and engineers practiced lifting and stacking techniques during the week of Feb. 25 as they moved a 6-ton replica escape rocket called the Launch Abort System (LAS) from a trailer to the top of a replica Orion capsule.

Although stacking the real thing for a Space Launch System mission is still a few years off, engineers said performing the task now, using the same procedures and demands that will accompany the actual assembly, helps them anticipate potential future challenges.

The practice also keeps the crane operators proficient in handling spacecraft components that must be moved gingerly and placed precisely. The exercise was performed using the same equipment and operators that stacked space shuttles for launch.

During missions, the LAS will be ready to ignite its solid-fueled engines and lift the Orion and its crew away from disaster in the unlikely event of an emergency during the first part of the launch.

For the complete story, visit: <http://www.nasa.gov/exploration/systems/ground/LASstack.html>



## Launch Pad of the Future Takes Shape

The launch pad of the future is taking shape at Kennedy Space Center as the Ground Systems Development and Operations (GSDO) Program, along with Center Operations, continues with construction upgrades and modifications to Launch Pad 39B, where the agency's Space Launch System (SLS) will lift off with the Orion spacecraft atop it, sending humans to new destinations in the solar system.

Center Operations is providing several services to GSDO in order to manage and implement the upgrades. Systems engineers and construction managers are working on studies, designs and construction requirements for several Pad B projects.

One of the most visible new features on the pad surface is a steel and concrete structure that houses two elevators and the associated machinery required to operate them. The elevators will provide access from the surface to the "O" level, or deck, of the mobile launcher.

The elevators, which open toward the west, were designed to be similar to those on the mobile launcher in size and capacity.

Many other upgrades and modifications are planned for Pad B. For the complete story, visit [http://www.nasa.gov/exploration/systems/ground/pad\\_b\\_mods.html](http://www.nasa.gov/exploration/systems/ground/pad_b_mods.html)



## Launch Abort Motor Arrives for EFT-1

A critical segment of Orion's Launch Abort System, the launch abort motor, recently arrived at Kennedy Space Center's Launch Abort System Facility (LASF) for Exploration Flight Test (EFT)-1. Built by Alliant Technologies (ATK), the abort motor is one segment of the abort system that will be used to pull the crew to safety and position the module for a safe landing in case of an emergency during future missions.

During a media viewing of the launch abort motor, Brian Duffy, vice president and program manager for Exploration Systems with ATK Aerospace Group, said it is

a one-of-a-kind piece of hardware that is uniquely engineered. The motor is loaded with inert solid fuel because EFT-1 will be an uncrewed flight test.

While only the jettison motor will be active during the 2014 test to enable the entire system to detach from Orion during ascent, the system will provide aerodynamics and environmental loads data.

"In the future, crews aboard the spacecraft are going to feel very comfortable with the abort motor and the entire abort system," said Duffy, who was a four-time space shuttle mission crewmember.

For the complete story, visit <http://www.nasa.gov/exploration/systems/mpcv/las-motor.html>.



## Final Walkdown of Pad 39B Spheres Completed

The final walk down of the Liquid Hydrogen (LH2) and Liquid Oxygen (LO2) spheres at Launch Pad 39B was completed on Feb. 15. NASA and contractor designers, safety, and operations and maintenance workers inspected the tanks to ensure construction was completed to specifications. The existing LH2 and LO2 spheres were refurbished to support GSDO's fuel requirements for NASA's Space Launch System heavy-lift rocket.



## GSDO Presents at Kennedy Space Center Community Leaders Breakfast

Ruth Gardner, Exploration Systems manager in Kennedy's GSDO Program office, provided an update on current and future activities at the Florida spaceport during the center's annual Community Leaders Breakfast.

The event was held at the Kurt H. Debus Conference Center at the Kennedy Space Center Visitor Complex, Feb. 21.

The briefing is attended by local, state and U.S. government representatives, along with individuals from business and industry.



During Florida Space Day in Tallahassee, the GSDO Program office participated with a display of spacecraft models, informational brochures and an exhibit in the rotunda of the Capitol building, March 5 and 6.

## Awards Corner

Bill Simmonds, a project manager in the GSDO Project Management Office, received the NASA Environmental and Energy award. He was nominated by Center Operations for his efforts on various projects that range from facility upgrades and environmental cleanup, to master planning updates and more.

Simmonds received a certificate and a patch that was flown aboard a space shuttle mission for taking an interest in the future "greening" of Kennedy Space Center.



## Employee Spotlight Greg Horvath

Began his NASA career: 1987

Title: Chief of the Program Integration Office

Primary Responsibilities: Technical Integration, technical management and architecture Integration and management for the GSDO Program. Primary responsibilities for the division include integrating cross-program; program, institutional and mission needs to support a multi-use architecture approach.

Wanted to be: Professional Baseball Player

Family: Father of two teenage girls and two golden retrievers

In His Spare Time: Enjoys running, golfing and cruising with family and friends



## Coming in the Next Issue of GSDO Program Highlights:

Crawler Bearings Installed  
Orion Testing Update  
Aerojet Milestones Pave Way for Orion EFT-1  
Employee Spotlight